

*Patent*  
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**PATENT**  
Attorney Docket No. 202406

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

Nie et al.

Group Art Unit: 1765

Serial No. 09/405,653

Examiner: Unassigned

Filed: September 24, 1999

For: WATER-SOLUBLE  
LUMINESCENT QUANTUM DOTS  
AND BIOMOLECULAR  
CONJUGATES THEREOF AND  
RELATED COMPOSITIONS AND  
METHODS OF USE

**REQUEST FOR CORRECTED FILING RECEIPT**

Assistant Commissioner for  
Patents  
Office of Initial Patent Examination  
Customer Service Center  
Washington, D.C. 20231

Dear Sir:

Applicants respectfully request that a corrected version of the filing receipt (copy enclosed) be issued for the above-identified application.

Particularly, with respect to the city and state inventor Steven R. Emory, the filing receipt reads "Los Almos, NM" and should read --Los Alamos, NM--.

In addition, applicants respectfully request that the Official Filing Receipt acknowledge that this application claims priority to U.S. Provisional Application Serial Nos. 60/101,748 (filed on September 24, 1998) and 60/131,987 (filed on April 30, 1999), respectively. In this respect, applicants submit herewith a copy of page 1 of this application, which identifies the aforementioned provisional applications.

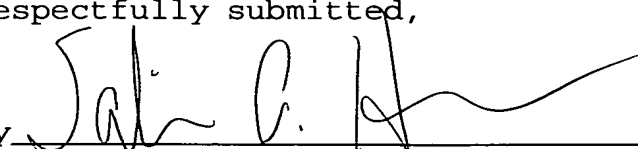
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In re Appln. of Nie et al.  
Serial No. 09/405,653



Respectfully submitted,

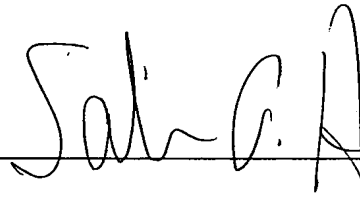
By

  
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CERTIFICATE OF MAILING

I hereby certify that this REQUEST FOR CORRECTED FILING RECEIPT is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents and Trademarks, Washington, D.C. 20231, on November 18, 1999.

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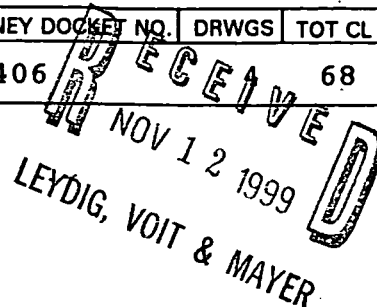
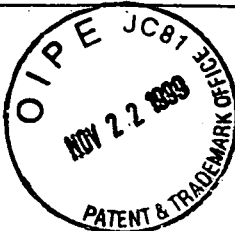
HRK



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APPLICATION NUMBER	FILING DATE	GRP ART UNIT	FIL FEE REC'D	ATTORNEY DOCKET NO.	DRWGS	TOT CL	IND CL
09/405,653	09/24/99	1765	\$812.00	202406		68	3

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Receipt is acknowledged of this nonprovisional Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Customer Service Center. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts of Application" ("Missing Parts Notice") in this application, please submit any corrections to this Filing Receipt with your reply to the "Missing Parts Notice." When the PTO processes the reply to the "Missing Parts Notice," the PTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

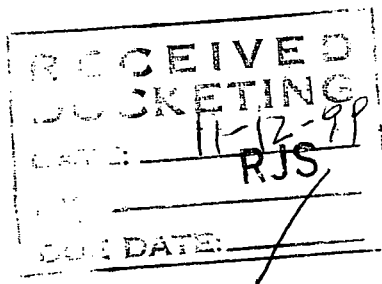
Applicant(s) SHUMING NIE, BLOOMINGTON, IN; WARREN C.W. CHAN,  
BLOOMINGTON, IN; STEVEN R. EMORY, LOS ALAMOS, NM.

IF REQUIRED, FOREIGN FILING LICENSE GRANTED 10/18/99

TITLE

WATER-SOLUBLE LUMINESCENT QUANTUM DOTS AND BIOMOLECULAR CONJUGATES  
THEREOF AND RELATED COMPOSITIONS AND METHOD OF USE

PRELIMINARY CLASS: 438

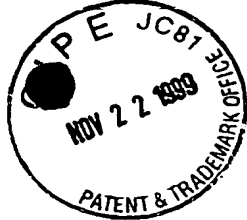


DATA ENTRY BY: RORIE, DEANNA

TEAM: 03 DATE: 11/04/99

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(See reverse for new important information)



# WATER-SOLUBLE LUMINESCENT QUANTUM DOTS AND BIOMOLECULAR CONJUGATES THEREOF AND RELATED COMPOSITIONS AND METHODS OF USE

5 This application claims priority to U.S. provisional patent application Serial No. 60/101,748, filed September 24, 1998, and U.S. provisional patent application Serial No. 60/131,987, filed April 30, 1999.

## GOVERNMENT SUPPORT

10 This invention was made, in part, with funding from the National Science Foundation under Grant No. CHE-9610254 and from the Department of Energy under Grant No. FG02-98ER 24873. Therefore, the United States of America may have certain rights in the invention.

## TECHNICAL FIELD OF INVENTION

15 The present invention relates to a water-soluble luminescent quantum dot, a biomolecular conjugate thereof and a composition comprising such a quantum dot or conjugate. Additionally, the present invention relates to a method of obtaining a luminescent quantum dot, a method of making a biomolecular conjugate thereof, and  
20 methods of using a biomolecular conjugate for ultrasensitive nonisotopic detection *in vitro* and *in vivo*.

## BACKGROUND OF THE INVENTION

The development of sensitive nonisotopic detection systems for use in  
25 biological assays has significantly impacted many research and diagnostic areas, such as DNA sequencing, clinical diagnostic assays, and fundamental cellular and molecular biology protocols. Current nonisotopic detection methods are mainly based on organic reporter molecules that undergo enzyme-linked color changes or are fluorescent, luminescent, or electroactive (Kricka, Ed., *Nonisotopic Probing, Blotting, and Sequencing*, Academic Press, New York, 1995; Issac, Ed., *Protocols for Nucleic Acid Analysis by Nonradioactive Probes*, Humana, Totowa, NJ, 1994; and Diamandis and Christopoulos, Eds., *Immunoassay*, Academic Press, New York, 1996). While  
30 these nonisotopic systems solve the problems associated with radioisotopic detection,